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PATENT APPLICATION
Mo-6418
MD-01-49

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF	
	GROUP NO.: 1711
JAN L. R. CLATTY	
SERIAL NUMBER: 09/876,778	EXAMINER: JOHN M. COONEY
FILED: JUNE 7, 2001	
TITLE: POLYURETHANE FOAMS HAVING IMPROVED HEAT SAG AND A PROCESS FOR THEIR PRODUCTION	

LETTER

Mail Stop - Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 2231-1450

Sir:

Enclosed herewith is an Appeal Brief in the matter of the subject Appeal. Please charge the fee for filing the Brief, $500.00, to our Deposit Account Number 13-3848.

Respectfully submitted,

By _____
Lyndanne M. Whalen
Attorney for Appellant
Reg. No. 29,457

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an enveloped addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 07/05/06
Date
Lyndanne M. Whalen, Reg. No. 29,457
Name of applicant, assignee or Registered Representative
_____
Signature
July 5, 2006
Date

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APPEAL BRIEF UNDER 37 C.F.R. §1.192

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Brief is an Appeal from the Final Action of the Examiner dated February 6, 2006 in which the rejection of Claims 1-7 (all of the pending claims) were maintained.

I. REAL PARTY IN INTEREST

The inventor assigned all of her rights to the present invention to Bayer Corporation, the predecessor of Bayer MaterialScience LLC. The real party in interest is therefore Bayer MateralScience LLC.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an enveloped addressed to: Commissioner for Patents, Alexandria VA 22313-1450 7/5/06
Date
Lyndanne M. Whalen, Reg. No. 29,457
Name of applicant, assignee or Registered Representative
Signature
July 5, 2006
Date

II. RELATED APPEALS AND INTERFERENCES

There are no pending appeals or interferences of which Appellant is aware that would be affected by or have a bearing on the Board's decision in this Appeal. A copy of the Board's Decision dated September 30, 2004 rendered in the parent of the present application is enclosed.

III. STATUS OF THE CLAIMS

Claims 1-7 remain pending and are the subject of this Appeal.

Claims 8-17 were cancelled, pursuant to a restriction requirement, in Appellant's Amendment filed December 16, 2002. These claims were presented in a divisional application which issued as U.S. Patent 6,649,667 on November 18, 2003.

IV. STATUS OF AMENDMENTS AFTER FINAL

No amendments to the claims have been made or requested subsequent to the Final Action of the Examiner.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to an isocyanate-reactive component useful for the production of a rigid closed cell polyurethane foam by a RIM process. (page 5, lines 4-7 of the specification) The isocyanate-reactive component of the present invention includes from 0.5 to 30% by weight (page 5, line 11 of the specification) of a polyol based on vegetable oil, fish oil or oil derived from animal fat (page 5, lines 16-20 of the specification), from 5 to 80% by weight (page 6, line 11 of the specification) of another isocyanate-reactive material having a functionality of at least 1 (page 6, line 3 of the specification) and a number average molecular weight of from 400 to 10,000 (page 5, line 32 of the specification), a chain extender (page 5, line 27 of the specification), a blowing agent (page 13, line 20-page 14, line 7 of the specification) and a catalyst (page 5, line 28 of the specification).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1-7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kurth (U.S. Patent 6,180,686).

VII. ARGUMENT

Appellant's Claims 1-7 are not rendered obvious by the teachings of Kurth.

Kurth discloses urethane foams produced by reacting soy oil, an isocyanate and a cross linker. "The soy oil **replaces** the polyol typically generally required in the production of urethanes." (Abstract of U.S. 6,180,686)

Kurth does **not** teach or suggest component b) of Appellant's claimed compositions, i.e., from 5 to 80% by weight of an isocyanate-reactive material having a functionality of at least 1 and a number average molecular weight of from 400 to 10,000 which is different from component a) (i.e., the vegetable oil, fish oil or oil derived from animal fat) .

Kurth does not teach or suggest use of any second isocyanate-reactive material having a molecular weight greater than or equal to 400. The only teachings in Kurth with respect to use of the known polyether and polyester polyols in the disclosed foam-forming systems are directed to the fact that these known polyols are being replaced by the disclosed vegetable oil(s). In fact, Kurth states:

> The present invention comprises a flexible or semi-rigid urethane foam that is the reaction product of at least an isocyanate, a vegetable oil, and a cross linking agent. **The reaction is free of petroleum-based polyester or polyether polyols.** (emphasis added) (column 7, lines 4-8)

There is no teaching in the Kurth reference which suggests use of **any** known polyether or polyester polyol in combination with the oil required in Appellant's claimed composition.

Kurth does not teach anything with respect to the flex modulus or heat distortion temperature of any of the disclosed foams.

In its decision of September 30, 2004, the Board held that Appellant's Claims 1-7 were *prima facie* obvious in view of the teachings of Kurth (U.S. Patent 6,180,686) in the absence of objective evidence of unexpected results.

Appellant therefore submitted the Declaration of Jan L. Clatty in which such objective evidence is presented. More specifically, the Clatty Declaration reports and discusses the results of experiments conducted with varying amounts of vegetable-based polyol.

The data and Exhibits presented in the Clatty Declaration clearly show that use of a bio-based polyol in the amounts required by Appellant's claims produces rigid polyurethanes having both a higher flex modulus and a higher heat distortion temperature than polyurethanes made with those same polyols in amounts greater than 30% (i.e., amounts outside the range required by Appellant's claims).

This combination of advantageous properties achieved with the present invention is neither taught nor suggested by the Kurth disclosure.

The Examiner has criticized the Clatty Declaration on the basis that the showings are "not commensurate in scope with the scope of the claimed invention".

Appellant respectfully disagrees.

Appellant's claims require from 0.5 to 30 wt.% of a polyol based on vegetable oil, fish oil or oil derived from animal fat. The Clatty Declaration demonstrates isocyanate-reactive components in which 1, 4, 8, 13, 21, and 30 wt.% is such a bio-based polyol, specifically, a soy-based polyol of the type disclosed by Kurth. Comparative showings in which isocyanate-reactive components containing 0 and 38 wt.% of that same bio-based polyol are also presented. The data presented in the Clatty Declaration are therefore commensurate in scope with the claimed invention.

The Examiner has argued that Appellant's showings are not commensurate in scope with the claimed invention because the showings are made with only one member of the claimed component a), one specific combination of polyols from the claimed component b), and no selectivity among the chain extender/crosslinkers, blowing agents, and catalysts of the claims.

Appellant submits that the Examiner's argument is not consistent with the established principle that a *prima facie* case of obviousness may be rebutted by

demonstrating that the claimed invention produces results which could not have been predicted from the teachings of the prior. Such unexpected results are demonstrated by comparing the claimed invention with the closest prior art.

In the present case, Kurth is the only prior art cited. The foam-forming systems disclosed by Kurth are therefore the closest prior art.

The **only** polyols disclosed as being suitable for the Kurth foam-producing systems which are also within the scope of Appellant's claimed invention are soy-based polyols.

Appellant's demonstration that surprising and unexpected results are achieved by the claimed invention when a soy-based polyol is used is therefore a comparison with the closest prior art and does therefore constitute evidence which rebuts any *prima facie* case of obviousness based upon the Kurth disclosure.

No other prior art which teaches the use of other bio-based polyols in foam-forming systems of the type being claimed by Appellant has been cited. No prior art or authority which teaches that soy-based polyols are not equivalent to all bio-based polyols in components such as that being claimed by Appellant has been cited.

The only prior art over which Appellant must distinguish the claimed invention is the Kurth disclosure. Appellant **has** presented data demonstrating that properties which could not have been predicted from Kurth's teachings are achieved when soy-based polyols are employed in the isocyanate-reactive component of the present invention.

In response to the Examiner's criticism with respect to the use of only one specific combination of polyols from claimed component b), Appellant would point out that Kurth teaches that **no** petroleum-derived polyols should be included in the disclosed systems.

The fact that Appellant has demonstrated surprising and unexpected results with only a single combination of polyols when the only cited prior art teaches that no such polyols should be used does **not** therefore constitute a valid basis for criticism of Appellant's comparative showings.

In response to the Examiner's criticism with respect to blowing agents, catalysts, chain extenders/cross linking agents, Appellant would direct the Board's attention to the fact that Kurth teaches that any of the known blowing agents and

crosslinking agents and catalysts may be used. It is the use of the vegetable oils which Kurth teaches to be the critical feature of the disclosed systems.

One skilled in the art reading the teachings of Kurth would not therefore expect that selection of a particular blowing agent or crosslinking agent would be a determinative factor in an evaluation of whether the vegetable oil taught by Kurth could be used in combination with some specific petroleum-based polyols but not others.

The fact that Appellant has not demonstrated surprising and unexpected results using a wide variety of known catalysts, chain extenders, blowing agents, etc. does not therefore constitute a valid basis for criticizing Appellant's comparative showings.

Appellant would further note that Claim 7 is specifically directed to a soybean-based polyol, a polyether polyol and a water blowing agent. The criticisms of Appellant's showings with respect to components a) and b) made in the Final Office Action are therefore particularly inappropriate with respect to Claim 7.

Appellant would also note that there are a large number of materials known to those skilled in the art which would come within the scope of Appellant's components a), b), c), d) and e), however, no indication as to what other components a), b), c), d) or e) would constitute a sufficiently "representative" showing has been given by the Examiner. In view of the fact that the only cited prior art (1) discloses only soybean oil; (2) teaches that no petroleum-based polyols should be used; and (3) teaches that any of the known blowing agents, catalysts, and cross-linking agents may be used, Appellant is unable to determine what other comparative showings are considered necessary to convince the Examiner of the patentability of the claimed invention over the teachings of Kurth.

In short, Appellant has compared the embodiments of the claimed invention which are closest to those disclosed in the only prior art cited in this case. Appellant believes that these comparisons clearly demonstrate that the claimed invention produces foams with improved properties that could not have been expected by one skilled in the art reading the Kurth disclosure.

VIII. CONCLUSION

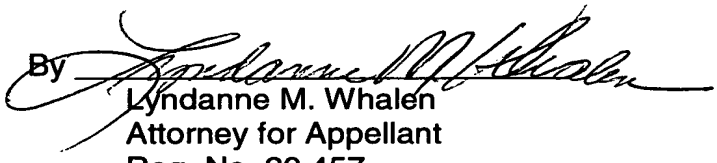
The Kurth reference teaches use of 100% bio-based polyols and discourages use of any other type of polyol.

Appellant has demonstrated that when particular amounts of a bio-based polyol (i.e., less than 100% bio-based polyol) are included with other isocyanate-reactive materials in the isocyanate-reactive component used to produce a rigid polyurethane foam by a RIM process, foams having unexpectedly better Heat Flex Modulus and Heat Distortion Temperature are obtained.

The teachings of the Kurth reference can not therefore be construed in any manner which would render Appellant's claimed invention obvious to one of ordinary skill in the art at the time Appellant made her invention.

Appellant therefore maintains that the Examiner's rejection is in error and respectfully requests that this rejection be reversed and that Claims 1-7 be allowed.

Respectfully submitted,

By 
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VII. CLAIMS APPENDIX

1. An isocyanate-reactive component useful for the production of a rigid closed cell polyurethane foam by a RIM process comprising:

a) from 0.5 to 30% by weight, based on total weight of isocyanate-reactive component, of a polyol based on vegetable oil, fish oil or oil derived from animal fat,

b) from 5 to 80% by weight, based on total weight of isocyanate-reactive component, of an isocyanate-reactive material which is different from a) having a functionality of at least 1 and a number average molecular weight of from 400 to 10,000,

c) a chain extender or a crosslinking agent,

d) a blowing agent, and

e) a catalyst.

2. The isocyanate-reactive component of Claim 1 in which up to 25% by weight of the total isocyanate reactive-component is a).

3. The isocyanate-reactive component of Claim 1 in which up to 20% by weight of the total isocyanate-reactive component is a).

4. The isocyanate-reactive component of Claim 1 in which at least 0.5% by weight of the total isocyanate-reactive component is a).

5. The isocyanate-reactive component of Claim 1 in which at least 5% by weight of the total isocyanate-reactive component is a).

6. The isocyanate-reactive component of Claim 1 in which a) is a blown soybean oil.

7. An isocyanate-reactive component useful for the production of a rigid closed cell polyurethane foam by a RIM process comprising

a) at least 10% by weight, based on total weight of isocyanate reactive component, of a soybean oil based polyol,

b) from 5 to 80% by weight, based on total weight of isocyanate-reactive component of a polyether polyol having a functionality of from 2 to 8 and a number average molecular weight of from 400 to 10,000,

c) from 1 to 75% by weight, based on total weight of isocyanate-reactive component of a chain extender,

d) water, and

e) a catalyst.

IX. EVIDENCE APPENDIX

JAN CLATTY DECLARATION DATED MARCH 3, 2005
(Copy attached)

PATENT APPLICATION
Mo 6418
MD 01-49-PU

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF

JAN L. CLATTY

SERIAL NUMBER: 09/876,778

FILED: JUNE 7, 2001

TITLE: POLYURETHANE FOAMS HAVING IMPROVED HEAT SAG AND A PROCESS FOR THEIR PRODUCTION

GROUP ART UNIT: 1711

EXAMINER: JOHN M. COONEY

DECLARATION UNDER 37 CFR 1.132

I, Jan L. Clatty of 909 Tottenham Drive, Moon Township, PA 15108 declare as follows:

1. I studied Chemistry at Penn State University and obtained a Bachelor of Science degree in 1984. Since 1986 I have been employed by Bayer MaterialScience LLC and its predecessor companies in Pittsburgh, PA to do research and development work in the area of polyurethane foams and elastomers. My current position is Principal Scientist in the Polyurethanes RIM Elastomers and Foams Department.

2. I am the inventor of the subject matter being claimed in the above-identified United States patent application.

3. I have read and am familiar with the disclosures made in WO 00/23491 and in U.S. Patent 6,180,686 which have been cited against the claims pending in the above-identified application.

4. In order to demonstrate that the invention claimed in the above-identified application is significantly different from the developments disclosed in WO 00/23491 and in U.S. Patent 6,180,686, I performed or supervised the experiments described below.

EXPERIMENTS

The following starting materials were used in these Experiments:

SOY A	a polymerized soybean oil having a hydroxyl functionality of 1.8, a hydroxyl number of 51.8 and an equivalent weight of 1100 which is commercially available under the name SoyOyl P38.05 (low odor) from Urethane Soy Systems Co., Inc.
SOY B	a polymerized soybean oil having a hydroxyl functionality of 3, a hydroxyl number of 174 and an equivalent weight of 322 which is commercially available under the name SoyOyl P38.GC5 from Urethane Soy Systems Co., Inc.
SOY C	a polymerized soybean oil having a hydroxyl functionality of 3.4, a hydroxyl number of 65.8 and an equivalent weight of 850 which is commercially available under the name SoyOyl P56.05 from Urethane Soy Systems Co., Inc.
POLYOL A	Glycerol-started polyether of propylene oxide having a functionality of 3 and a hydroxyl number of 1050 (molecular weight about 160)
POLYOL B	A glycerol-started polyether of propylene oxide and ethylene oxide (83 wt.% propylene oxide and 17 wt.% ethylene oxide) having a hydroxyl number of 28 and a functionality of 3.
DC 193	Silicone surfactant available as Dow Corning 193 from Dow Corning Corporation.
PU-1748	A quaternary ammonium salt of the amide of tall oil and N,N' dimethyl-1,3-diamine propane.

ISO modified diphenylmethane diisocyanate having an NCO content of 27% by weight which is commercially available from Bayer MaterialScience LLC under the name Mondur 486.

General Procedure:

An isocyanate-reactive component composed of the materials listed in TABLE A or TABLE B in the amounts indicated in parts by weight in TABLE A or TABLE B was prepared. This isocyanate-reactive component was then reacted with ISO in an amount such that the Isocyanate Index was 110. The ISO and isocyanate-reactive component were mixed using an air mixer and hand cast or poured into an aluminum lab mold. The Flex Modulus and Heat Distortion Temperature of the molded articles are graphically presented in either Exhibit A (Experiments 1-13) or Exhibit B (Experiments 1 and 14-17).

The Compression Strength, Flex Modulus and Heat Distortion Temperature for each polyurethane foam made are reported in TABLE A or TABLE B. The Flex Modulus and Heat Distortion Temperature of the rigid, closed-cell polyurethane foams made in these Experiments are plotted against the % Soy Polyol in the isocyanate-reactive component in either the attached Exhibit A or Exhibit B.

The Flex Modulus was determined in accordance with ASTM D 790 and is reported in Exhibits A and B in 10^3 psi and graphically presented in Exhibits A and B.

The Compression Strength was determined in accordance with ASTM D 695 @ 25% and is reported in psi in TABLES A and B.

Heat Distortion was determined in accordance with ASTM D 648 Temperature @ 66 psi and is reported in °C in TABLES A and B and graphically presented in Exhibits A and B.

Experiments 1-13

No soy-based polyol was included in the isocyanate-reactive component used in control Experiment 1.

In each of experiments 2-13, the isocyanate-reactive component did include one of three different soy-based polyols in the amount indicated in TABLE A. In each of these experiments, the soy-based polyol was simply added to the isocyanate-reactive component used in control Experiment 1. The amount of isocyanate used was adjusted to compensate for the increased amount of reactive hydroxyl groups and to maintain the NCO Index at 110.

TABLE A

Experiment/ Material	1*	2	3	4	5	6	7	8	9
SOY A (pbw)	0	0	0	0	0	0	0	0	0
SOY B (pbw)	0	0	0	0	0	1	5	10	30
SOY C (pbw)	0	1	5	10	30	0	0	0	0
POLYOL A (pbw)	55	55	55	55	55	55	55	55	55
POLYOL B (pbw)	45	45	45	45	45	45	45	45	45
DC 193 (pbw)	3	3	3	3	3	3	3	3	3
PU-1748 (pbw)	6	6	6	6	6	6	6	6	6
WATER (pbw)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
% SOY[1]	0	1	4	8	21	1	4	8	21
HDT @ 66 psi (°C)	58	58	57	55	54	69	67	66	63
Compression Strength @ 25%	4474	4459	4533	4120	3930	5028	4883	4656	4203
Flex Modulus (10^3 psi)	161	162	154	147	116	179	173	163	135

pbw = parts by weight

* Comparative Experiment

[1] % SOY - wt% of vegetable-based polyol present in isocyanate-reactive component

TABLE A (cont'd)

Experiment/ Material	10	11	12	13
SOY A (pbw)	1	5	10	30
SOY B (pbw)	0	0	0	0
SOY C (pbw)	0	0	0	0
POLYOL A (pbw)	55	55	55	55
POLYOL B (pbw)	45	45	45	45
DC 193 (pbw)	3	3	3	3
PU-1748 (pbw)	6	6	6	6
WATER (pbw)	0.7	0.7	0.7	0.7
% SOY[1]	1	4	8	21
HDT @ 66 psi (°C)	56	58	57	54
Compression Strength @ 25%	2269	4529	4218	3820
Flex Modulus (10^3 psi)	161	155	157	110

pbw = parts by weight

[1]% SOY = wt% vegetable-based polyol in isocyanate-reactive component

As can be seen from TABLE A and Exhibit A, there were slight differences in Flex Modulus and Heat Distortion Temperature for the foams due to differences in the soy-based polyol. However, simply adding the soy-based polyol to the isocyanate-reactive component reduced the Flex Modulus of the polyurethane. The Heat Distortion Temperature of the polyurethanes made with the added soy-based polyol were comparable to or slightly better than the control.

Experiments 1 and 14-17

In Experiment 1, the control, no soy-based polyol was included in the isocyanate-reactive component.

In each of Experiments 14-17, the soy-based polyol (POLYOL A) was included in the isocyanate-reactive component in the amount indicated in TABLE B. In these Experiments, the soy-based polyol was used in substitution for a portion of POLYOL B (Experiments 14-16) or all of POLYOL B (Experiment 17) that had been used in control Experiment 1. The amount of isocyanate used remained relatively constant because the number of reactive hydroxyl groups in the isocyanate-reactive component remained relatively constant.

TABLE B

Experiment/ Material	1*	14	15	16	17*
SOY A (pbw)	0	15	25	35	45
SOY B (pbw)	0	0	0	0	0
SOY C (pbw)	0	0	0	0	0
POLYOL A (pbw)	55	55	55	55	55
POLYOL B (pbw)	45	30	20	10	0
DC 193 (pbw)	3	3	3	3	3
PU-1748 (pbw)	6	6	6	6	6
WATER (pbw)	0.7	0.7	0.7	0.7	0.7
% SOY[1]	0	13	21	30	38
HDT @ 66 psi (°C)	58	68	73	74	64
Compression Strength @ 25%	4474	4478	4583	4485	4359
Flex Modulus (10^3 psi)	161	178	175	171	150

pbw = parts by weight

* Comparative Example

[1]% SOY = wt% vegetable-based polyol in isocyanate-reactive mixture

As can be seen from TABLE B and Exhibit B, the Flex Modulus of the polyurethanes made with the soy-based polyol was higher than that of the control for each foam with the exception of the foam produced with an isocyanate-reactive component containing 38% soy-based polyol. Similarly, the Heat Distortion Temperature for the foams made with 13 wt%, 21 wt% and 30 wt% (based on total weight of isocyanate-reactive component) of the soy-based polyol was higher than that of the control (Experiment 1) and the foam made with an isocyanate-reactive component that included 38 wt% soy-based polyol (Experiment 17).

The improved Heat Distortion Temperature and Flex Modulus properties achieved when up to 30 wt% of the isocyanate-reactive component was a vegetable-based polyol could not have been expected from the teachings of either U.S. 6,180,686 or WO 00/23491.

5. CONCLUSIONS

As can be seen from the data presented in TABLE A and Exhibit A, just adding a vegetable-based polyol to a typical polyurethane-forming reaction mixture did not significantly improve the properties of the polyurethane.

It can be seen from the data presented in TABLE B and Exhibit B, that when a vegetable-derived polyol was used as a substitute for a portion of a polyether polyol of the type which is typically used in such formulations, polyurethanes having improved properties were obtained. More specifically, when a soy-based polyol is used in an amount greater than 0 and less than or equal to 30 wt%, polyurethanes characterized by higher Flex Moduli and Heat Distortion Temperatures than (a) the control in which no vegetable oil-derived polyol was used and (b) compositions in which greater than 30 wt% soy-based polyol was used were produced.

There is no teaching in either WO 00/23491 or U.S. Patent 6,180,686 which would lead one skilled in the art to expect such results.

6. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Further Declarant Sayeth Not.

Signed at Pittsburgh, Pennsylvania, this 3rd day of MARCH, 2005.

Jan L. Clatty

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X. RELATED PROCEEDINGS APPENDIX

BOARD OF APPEALS DECISION OF SEPTEMBER 30, 2004
(Copy attached)

Mo6418

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte JAN L. CLATTY

Appeal No. 2004-2293
Application No. 09/876,778

ON BRIEF

Before OWENS, KRATZ, and TIMM, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal involves claims 1-7, which are all of the claims pending in this application.

We have jurisdiction over the appeal pursuant to 35 U.S.C. § 134.

INTRODUCTION

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,180,686 B1 issued to Kurth on January 30, 2001 (Kurth).[1] Appellant states that the claims stand or fall together (Brief, p. 3). We select claim 1 to represent the issues on appeal. Claim 1 reads as follows:

1. An isocyanate-reactive component useful for the production of a rigid closed cell polyurethane foam by a RIM process comprising:

a) from 0.5 to 30% by weight, based on total weight of isocyanate-reactive component, of a polyol based on vegetable oil, fish oil or oil derived from animal fat,

b) from 5 to 80% by weight, based on total weight of isocyanate-reactive component, of an isocyanate-reactive material which is different from a) having a functionality of at least 1 and a number average molecular weight of from 400 to 10,000,

c) a chain extender or a crosslinking agent,

d) a blowing agent, and

e) a catalyst.

We affirm and in so doing we adopt the Examiner's well stated findings of fact and conclusions of law as our own. We add the following for emphasis.

---

[1]The rejection of claims 1-7 under 35 U.S.C. § 102(b) as anticipated by WO 00/234,491 has been withdrawn by the Examiner (Answer, p. 3).

OPINION

There is no question here that Kurth suggests formulating a composition including a polyol based on vegetable oil as required by part a) of claim 1 along with ingredients meeting parts c) through e) of the claim. The question is whether Kurth fairly suggests the additional inclusion of an ingredient meeting part b) of the claim in the concentration further required by the claim.

The Examiner's rejection is based upon the fact that Kurth describes a isocyanate-reactive component including blown soy oil, crosslinking agent, blowing agent, and catalyst as required by claim 1, parts a) and parts c) through e). It is further based upon the fact that Kurth also provides evidence that, conventionally, such isocyanate-reactive compositions were formulated with petroleum-based polyols of the type required by part b) of claim 1. Kurth seeks to replace those conventional polyols with vegetable oil based polyols and describes doing so in toto. However, we agree with the Examiner that once one of ordinary skill in this art understood that vegetable oil based polyols as well as petroleum-based polyols are useful for formulating isocyanate-reactive compositions, the use of the two types of polyols together would have been obvious. When the prior art teaches several compositions useful for the same purpose, it is *prima facie* obvious to combine two or more of those compositions for use for the very same purpose. *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Appellant argues that there is no motivation to include petroleum-based polyols along with the vegetable oil based polyols because Kurth teaches avoidance of the petroleum-based polyols. We agree that there is no express suggestion of making the combination in Kurth. But such an express suggestion is not required to establish a *prima facie* case of obviousness. Instead, it "may come from the prior art, as filtered through the knowledge of one skilled in the art." *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1472, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997); *see also Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996). One of ordinary skill in the art would take known property and economic considerations into account in selecting the polyol or combination of polyols to use. Kurth indicates that the selection of polyol does not dramatically impact either the processing or the qualities of the end product (Kurth, col. 4, ll. 14-20). Economic factors alone can provide motivation to make a modification. *In re Thompson*, 545 F.2d 1290, 1294, 192 USPQ 275, 276-77 (CCPA 1976). Moreover, selection may hinge on availability of reactants as well. We find that there is sufficient factual evidence to support the Examiner's finding of a suggestion to use both types of polyols in the composition of Kurth.

Appellant argues that one of ordinary skill in the art would not know how much of the petroleum-based polyol to include (reply Brief, pp. 2-3). We cannot agree. Under the facts of this case, the concentration would be determinable through routine experimentation. The evidence indicates that useful products can be obtained at a wide range of concentrations. See

Kurth at column 4, lines 17-20 which states that "[t]he qualities of the final flexible or semi-rigid urethane foam produced using the vegetable oil are consistent with those produced using high grade, expensive [petroleum-based] polyol." In such a situation, the burden is on the applicant to establish non-obviousness through unexpected results or other evidence of secondary considerations. *See In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990); *In re Ranier*, 377 F.2d 1006, 1010, 153 USPQ 802, 805 (CCPA); *In re Bourden*, 240 F.2d 358, 361, 112 USPQ 323, 325 (CCPA 1957); *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

As a final point, we note that Appellants base no arguments upon objective evidence of non-obviousness such as unexpected results. We conclude that the Examiner has established a *prima facie* case of obviousness with respect to the subject matter of claims 1-7 which has not been sufficiently rebutted by Appellants.

CONCLUSION

To summarize, the decision of the Examiner to reject claims 1-7 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

TERRY J. OWENS
Administrative Patent Judge

PETER F. KRATZ
Administrative Patent Judge

CATHERINE TIMM
Administrative Patent Judge

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